



28018126



EXAMINATIONS COUNCIL OF ZAMBIA
JUNIOR SECONDARY SCHOOL LEAVING EXAMINATION (GRADE 9) – 2020

Integrated Science 502/1
Paper 1

(INTERNAL CANDIDATES)

Time: 2 hours 30 minutes

Marks: 80

Instructions to Candidates

- 1 Separate the inserted **Answer Booklet** from the question paper.
- 2 Write your **examination number, school/centre name and code** on the **Answer Sheet**.
- 3 Ensure that you **write** your **examination number** on **every page** of the Answer Booklet.
- 4 This paper consists of two Sections **A** and **B**. Answer all the questions in both sections of this paper.
- 5 Section **A**: for each question, **four** suggested answers **A, B, C** and **D** are given. Choose the best one and show it on the answer grid in the Booklet by marking it with a cross (×).

Example, if the answer is C it will be marked as shown:

A	B	C	D
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- 6 Section **B**: write all the answers in the spaces provided for section **B** in the Answer Booklet.
- 7 Hand in the Answer Booklet and the rest of the question paper separately.

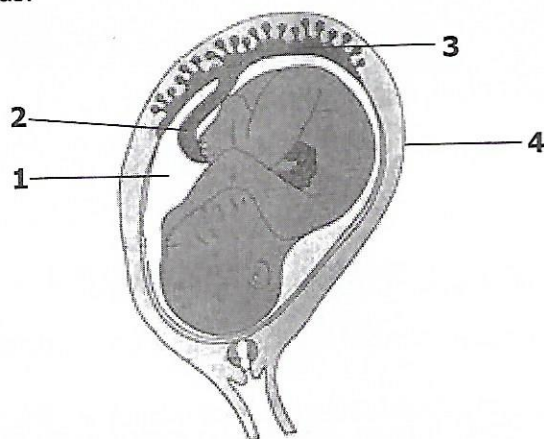
Information for Candidates

1. Cell phones are not allowed in the examination room.
2. Calculators are not allowed in the examination room.

SECTION A

Mark your answers with a cross (X) on the Answer Grid provided in the Answer Booklet.

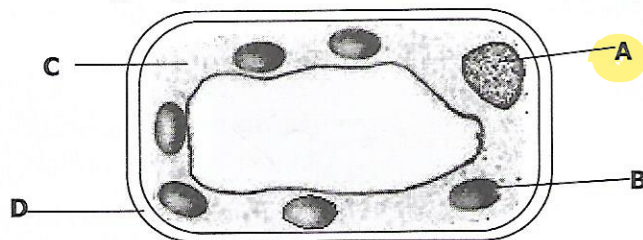
- 1 The period of sexual development in boys and girls is called ...
- A copulation.
 - B fertilisation.
 - C** puberty.
 - D reproduction.
- 2 The diagram below is of a female reproductive system showing the foetus in the uterus.



Which labelled part is responsible for the exchange of nutrients, oxygen and waste products between the embryo and the mother?

- A 1
 - B 2
 - C** 3
 - D 4
- 3 Which component of a balanced diet will be required in greater amounts by a manual worker?
- A** Carbohydrates
 - B Mineral salts
 - C Proteins
 - D Vitamins
- 4 Which of the following is an effect of water pollution? It causes ...
- A acid rain.
 - B** outbreak of diseases.
 - C difficulties in breathing.
 - D stunted growth in plants.

- 5 The following diagram shows the basic structures of a plant cell.

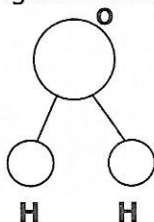


Which labelled part is responsible for controlling all cell activities?

- 6 A plant showing stunted growth with very small, yellow leaves is lacking the plant nutrient called ...

- A** nitrogen.
- B** oxygen.
- C** phosphorus.
- D** potassium.

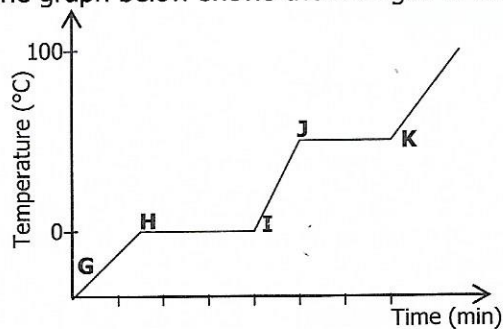
- 7 The diagram below shows a model of a molecule.



The model is of a molecule of ...

- A** hydrogen.
- B** nitrogen.
- C** oxygen.
- D** water.

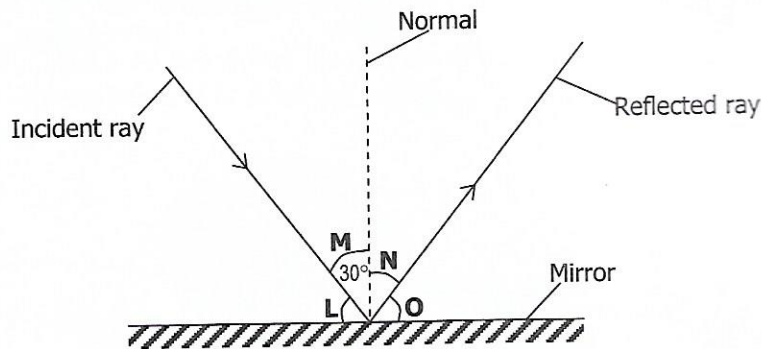
- 8 The graph below shows the changes in temperature of ice as it is heated.



Which two letters represent the stage when melting ice will be in form of both liquid and solid state?

- A** G and H
- B** H and I
- C** I and J
- D** J and K

- 9 Which of the following statements best describes weight? Weight is the measure of the ...
- A amount of matter in an object.
 - B force on an object per unit area.
 - C mass of a substance per unit volume.
 - D** force that acts on an object due to gravity.
- 10 Study the diagram below on an experiment on light.

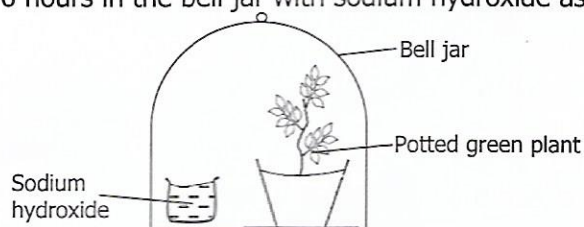


If the angle **M** is 30° , what will be the correct value of the angles labelled **N** and **O**?

	N	O
A	15°	15°
B	30°	30°
C	15°	90°
D	30°	60°

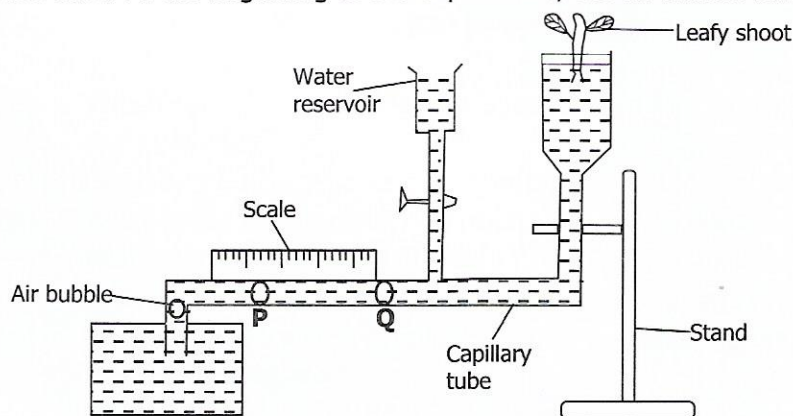
- 11 Which of the following components of blood is responsible for transporting water, body wastes and food nutrients?
- A Plasma
 - B Platelets
 - C** Red blood cells
 - D White blood cells
- 12 Which of the following shows the correct movement of inhaled air through the nose?
- A Alveolus \rightarrow bronchiole \rightarrow bronchus \rightarrow trachea
 - B Bronchus \rightarrow alveolus \rightarrow trachea \rightarrow bronchiole
 - C Trachea \rightarrow bronchiole \rightarrow alveolus \rightarrow bronchus
 - D** Trachea \rightarrow bronchus \rightarrow bronchiole \rightarrow alveolus

- 13 Which of the following describes the best way of prevention of Sexually Transmitted Infections (STIs) among adolescents?
- A Correct use of condoms
 - B Consistent use of condoms
 - C Abstinence from sex before marriage**
 - D Having sex with a faithful partner only
- 14 Which process removes nitrogen from the atmosphere?
- A Denitrification
 - B Nitrogen fixation**
 - C Respiration
 - D Photosynthesis
- 15 A potted green plant which had been in the dark for 48 hours was later enclosed for 6 hours in the bell jar with sodium hydroxide as shown below.



What colour would be observed when one leaf from the plant is tested for starch using iodine solution?

- A White
 - B Yellow
 - C Brown**
 - D Blue/Black
- 16 The diagram below shows a fresh plant that was cut and fixed at the end of a glass tube. At the beginning of the experiment, the air bubble was at position P.



After some hours, the air bubble moved to point Q. What is the name of the process that caused the bubble to move from P to Q?

- A Absorption
- B Photosynthesis
- C Respiration
- D Transpiration**

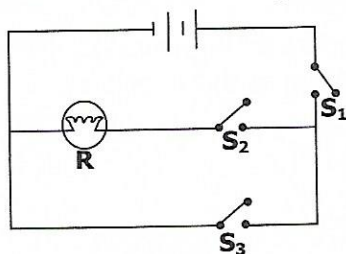
- 17** Copper II oxide is formed by heating copper in air. This is shown by the word equation below.

Copper + oxygen \rightarrow copper II oxide

This type of chemical reaction is classified as ...

- A** decomposition.
- B** double replacement.
- C** single replacement.
- D** synthesis.

- 18** Study the electric circuit diagram below.



Which switch(es) must be closed to make bulb **R** to light?

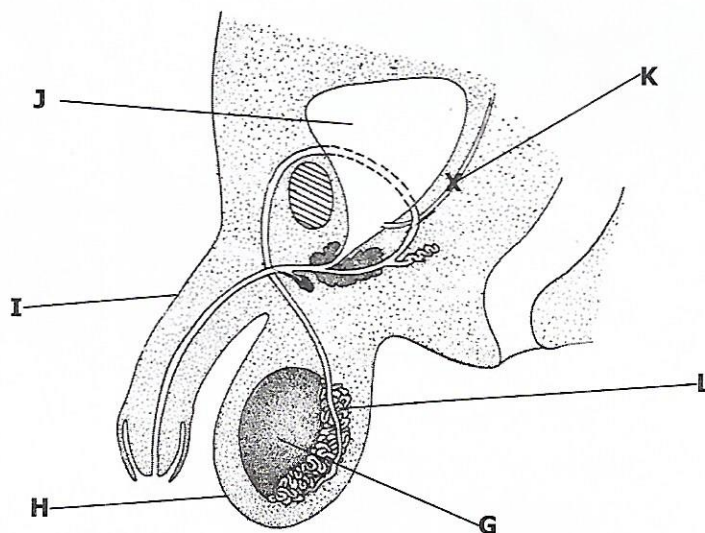
- A** **S₁** only
 - B** **S₁** and **S₂**
 - C** **S₁** and **S₃**
 - D** **S₂** and **S₃**
- 19** The law that states that mass of a substance before a chemical reaction is equal to the total mass of the substances that are produced is called the law of ...
- A** conservation of energy.
 - B** conservation of matter.
 - C** conversion of energy.
 - D** conversion of matter.
- 20** A space-craft that gathers and transmits messages as it orbits the earth is called ...
- A** communication satellite.
 - B** repeater station.
 - C** transformer.
 - D** transmitter.

SECTION B

Write all the answers in the spaces provided for section B in the Answer Booklet

1 THE HUMAN BODY

The diagram below shows the human male reproductive system.



- (a) Identify the structures labelled **H** and **I**. [2]
- (b) State **one** function of the part labelled **G**. [1]
- (c) Which structure in the diagram is responsible for the storage of male gametes? [1]
- (d) What would be the result of blocking the part labelled **K** at the position marked **X** in the process of human reproduction? [1]
- (e) Describe **one** way of observing personal hygiene of the male reproductive organs. [1]

Total = 6 marks

2 HEALTH

Below are pictures of two different children suffering from different nutritional deficiency diseases.



Child M



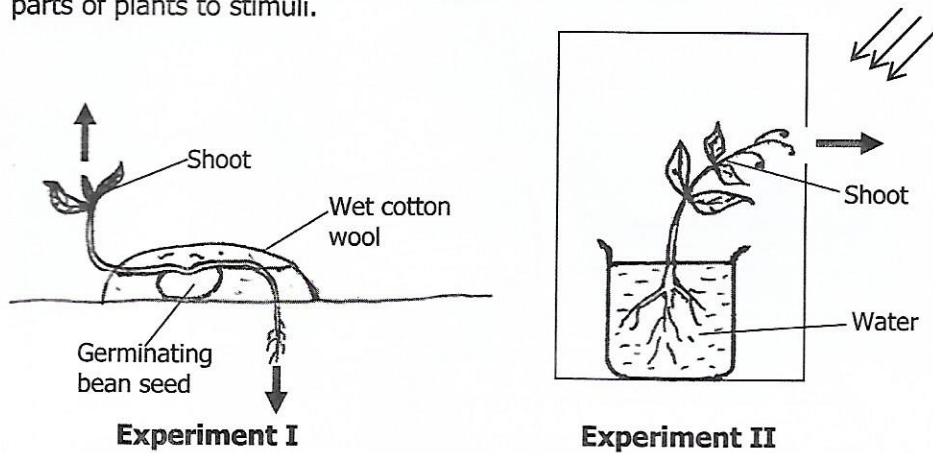
Child N

- (a) Identify the nutritional deficiency disease in
- (i) child **M**,
 - (ii) child **N**. [2]
- (b) What symptoms in the picture does child **M** exhibit that helped you to identify the disease in question (a) above? [1]
- (c) Explain how the nutritional deficiency disease which child **N** could be suffering from, can be controlled. [1]
- (d) Name any other nutritional deficiency disease apart from the ones shown in the pictures. [1]
- (e) Describe the importance of children's clinics. [1]

Total = 6 marks

3 PLANTS AND ANIMALS

The diagrams below illustrate experiments on growth responses made by parts of plants to stimuli.

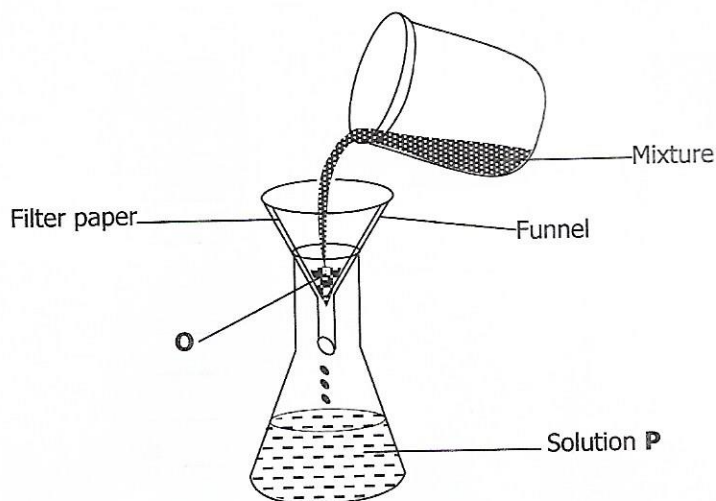


- (a) What stimulus is being demonstrated in
- experiment I,
 - experiment II?
- [2]
- (b) State the growth response shown by the shoots in
- experiment I,
 - experiment II.
- [2]
- (c) Apart from the shoots, which other region of growth in the plant is shown in the diagrams?
- [1]
- (d) Why is the wet cotton wool necessary in experiment I?
- [1]

Total = 6 marks

4 MATERIALS AND ENERGY

The diagram below shows an experiment on separation of a mixture of salt and sand.

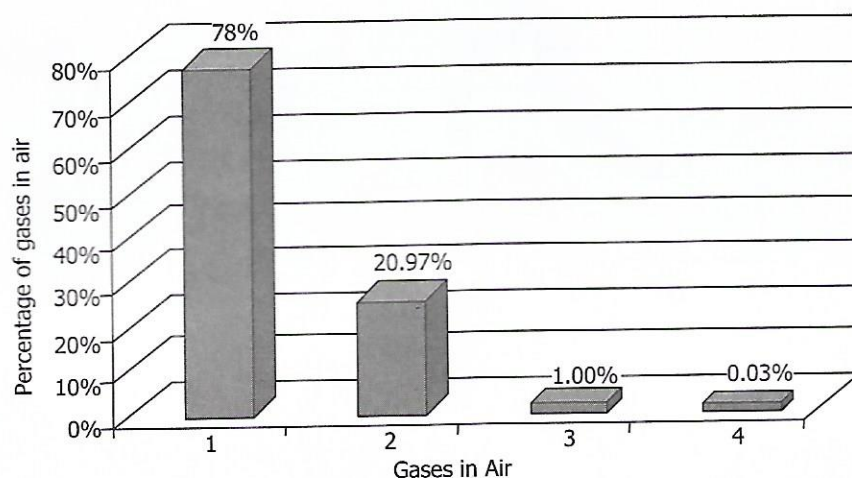


- (a) State the term used to describe
- (i) substance **O**,
 - (ii) solution **P**. [2]
- (b) What does solution **P** contain? [2]
- (c) What method could be used to separate the contents of solution **P** where only the solid part is obtained? [1]
- (d) State **one** industrial application of the method of separation of mixtures shown in the diagram. [1]

Total = 6 marks

5 MATERIALS AND ENERGY

The bar chart below shows the approximate composition of gases in atmospheric air.

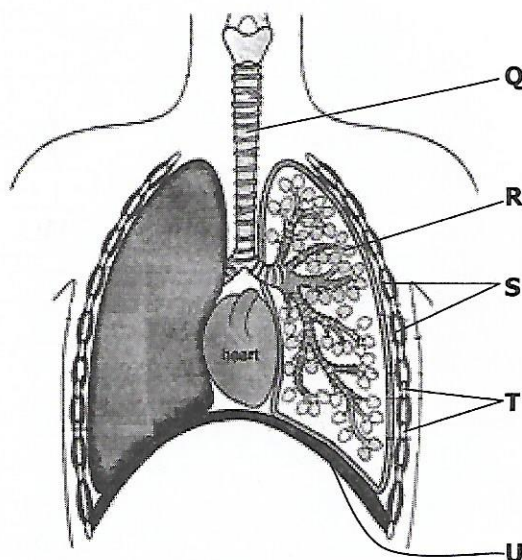


- (a) Name the gases **1** and **4**. [2]
- (b) Which number in the chart represents the gas that supports burning? [1]
- (c) Identify the bar that shows a mixture of other gases in air. [1]
- (d) State a gas that combines with the gas shown by bar **2** to form water. [1]
- (e) Describe **one** use of the gas shown in bar **4**. [1]

Total = 6 marks

6 THE HUMAN BODY

The diagram below shows the human respiratory system.

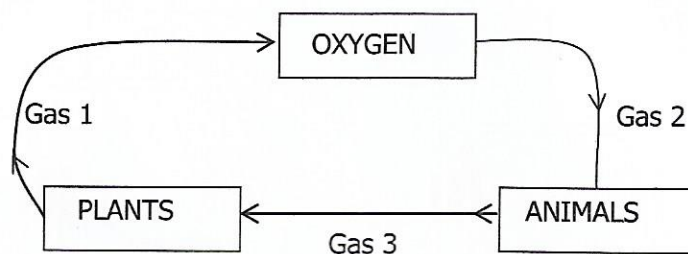


- (a) Identify the parts labelled **Q** and **T**. [2]
- (b) In which labelled part does gaseous exchange take place? [1]
- (c) What is the function of the part labelled **S**? [1]
- (d) State whether the shape and position of the part **U** indicates inhalation or exhalation. [1]
- (e) What respiratory disease is caused by cigarette smoking? [1]

Total = 6 marks

7 THE ENVIRONMENT

The diagram below shows a simple oxygen cycle.

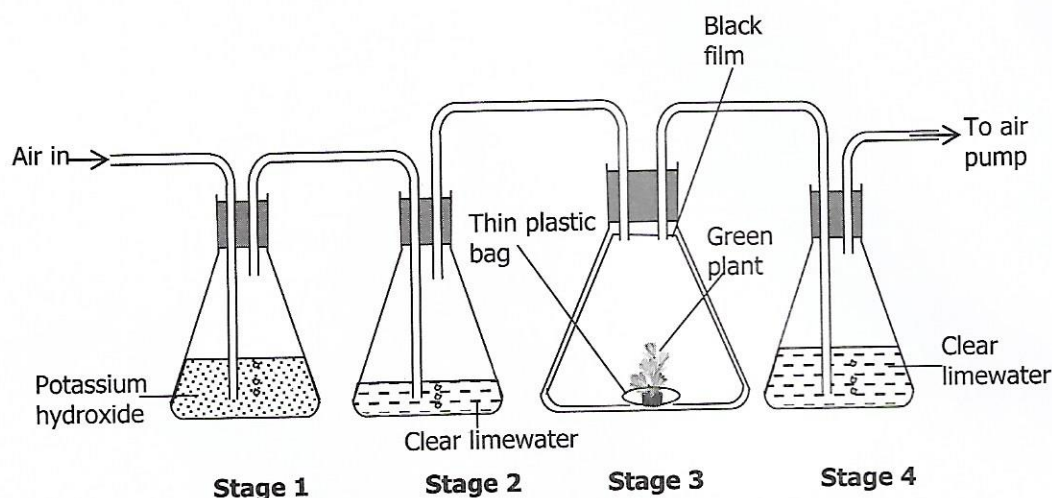


- (a) Identify the process that occurs in
- (i) plants to produce gas 1,
 - (ii) animals to produce gas 3. [2]
- (b) Write the word equation for the process that occurs in plants to produce gas 1. [1]
- (c) Apart from the processes in plants and animals, which other process uses oxygen? [1]
- (d) What is gas 3? [1]
- (e) Explain the importance of the oxygen cycle in the atmosphere. [1]

Total = 6 marks

8 PLANTS AND ANIMALS

The diagram below shows the arrangement of the apparatus used to investigate whether carbon dioxide is given off by green plants.

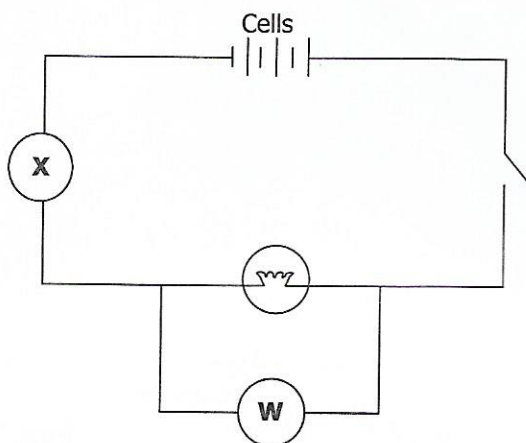


- (a) What is the function of the potassium hydroxide in the experiment at stage 1? [1]
- (b) What other chemical reagent can be used in place of potassium hydroxide? [1]
- (c) In the experiment, what is the purpose of the
 - (i) clear limewater at stage 2,
 - (ii) black film inside the bell jar,
 - (iii) thin plastic bag around the pot? [3]
- (d) What change would be observed in the limewater at stage 4? [1]

Total = 6 marks

9 MATERIALS AND ENERGY

The diagram below shows some instruments connected in the circuit diagram as well as three cells with a voltage of 2V each.



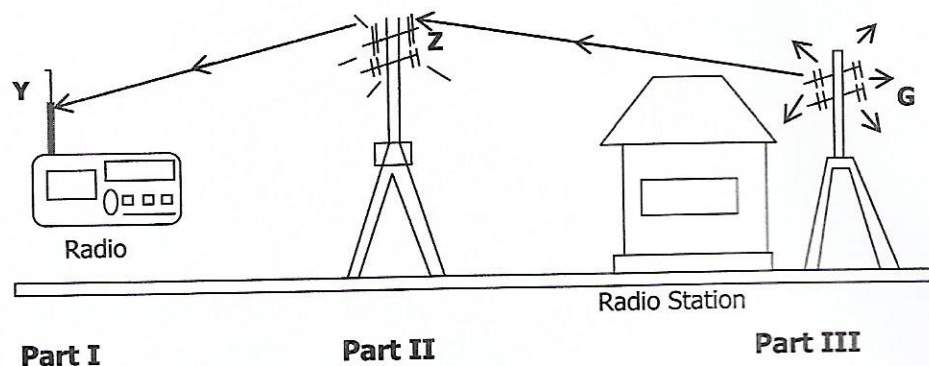
- (a) Name instrument **X**. [1]
- (b) What is the difference in the way instrument **X** and **W** are connected? [1]
- (c) What does instrument **W** measure? [1]
- (d) Write a formula used to express the relationship between current, voltage and resistance. [1]
- (e) What would be the reading on instrument **W** if the switch is closed? [1]
- (f) Mention **one** use of electricity in our homes. [1]

Total = 6 marks

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10 MATERIALS AND ENERGY

The diagram below illustrates transmission of radio signals.



- (a) In what form do the radio signals travel from part **III** to part **I**? [1]
- (b) Identify part **G**. [1]
- (c) What are the functions of the parts labelled **Y** and **Z**? [2]
- (d) What would be the effect on the radio if the structure **Z** at part **II** is removed? [1]
- (e) Explain how we are able to watch on television, a game played in another part of the country at the same time as it is being played. [1]

Total = 6 marks

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